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ORIGINAL ARTICLES.

A MUSCLE ADVANCEMENT.

The Combined Use of the Advantageous Principles of Worth and Hulen.

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In presenting the following muscle operation no claim for invention or originality is made. Not even a modification can be claimed. It may appear superfluous to attempt to add anything to the multitude of muscle operations now extant. However, the following is given for what it is worth. If it prove of but a modicum of value, well and good; if not, it will by a natural process take its place in the limbo of inappropriate and unsuitable operations. Those who have done the Hulen operation must have been struck with the simplicity of the procedure and ease of execution. The immediate effect is beautiful. It possesses one inherent defect, however, viz.: the muscle stitch. This cuts out and allows the muscle to slip back, defeating to an extent the immediate perfect cosmetic result. The scleral stitch holds very firmly. On the other hand, the Worth operation provides us with a splendid muscle stitch, whereas the scleral one proves the weak factor. I had forcibly impressed upon me the defects of both operations, but also the merits of both procedures. Consequently a combination of the two, with some slight modifications, was made. Noting that at times the scleral stitch was apparently insufficiently secured, due to the fear of the operator of taking too deep a bite and thereby entering the anterior chamber, a slight change was made in the Hulen stitch, which I feel possesses certain advantages. A look at the accompanying

figures (Figure 1) will show that a maximum bite can be taken with a straight needle, a lesser one with a half curved and the least with a full curved needle. So far as depth of bite is concerned, the full curved needle gives us a good one but at the expense of breadth. For obvious reasons the use of a straight needle is impractical. The writer takes two bites, which allows him to follow more closely the curve of the limbus, keeping away from the ciliary region in case the needle penetrates too deep, and furthermore the entrance and emergence of the threads (1 and 4, Fig. 2) are sufficiently far apart to allow of a spreading of the muscle, preventing bunching. There is no question about its holding firmly. The scleral suture may be of black silk and

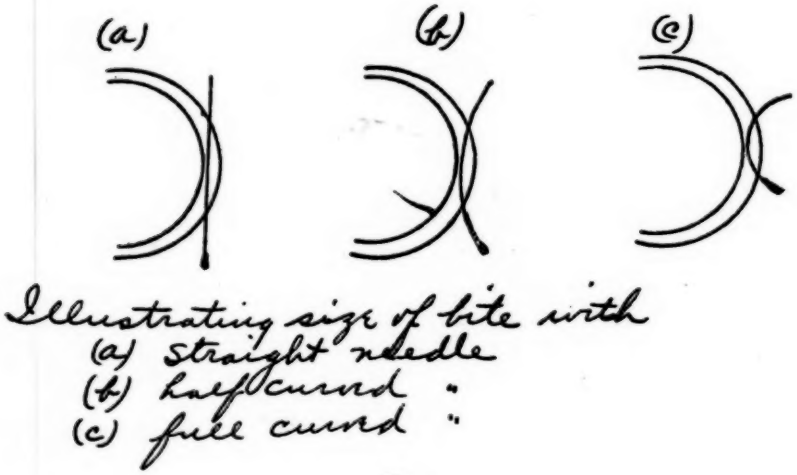

Fig. 1.

the muscle suture of Japanese silk. The feature of using approximation sutures after the method of Hulen should be emphasized. The operator is enabled to leisurely and carefully tie the tie-sutures, the advancement of the muscle and approximation of tissues being accomplished by the assistant by means of the approximation sutures. An added feature (which the operator may or may not use as he elects) is the passing of the muscle tie-sutures through the tag of tendon of the severed muscle. Suker, of Chicago, utilizes the tendon-tag in his muscle operations. Strictly speaking, this operation is not an advancement, as the new insertion is at the site of the old one. There is, however, a shortening of the muscle and an advancement of the capsule and conjunctiva.

With the advancement may be associated a tenotomy of the opposing muscle or a Todd-Harmon lengthening; this is dependent, as is likewise the amount of muscle excised, on the degree of squint. One feels after a Todd-Harmon lengthening that one has not irretrievably severed muscle from globe.

Described briefly the steps of the operation are as follows: The conjunctiva is picked up, incised vertically, the muscle separated and clamped with a Prince or Worth clamp, as is commonly practiced. The tendon is severed, leaving an appreciable tag at its insertion. The scleral stitch had best be taken

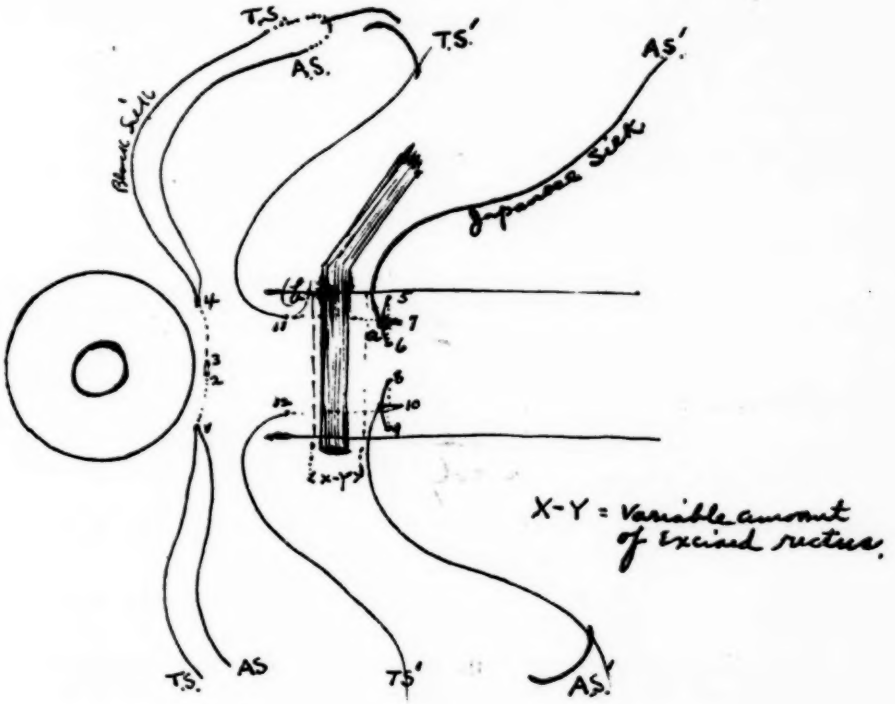

Fig. 2.

now, as manipulation of or about the globe softens it a trifle, and it is a patent fact that the difficulty of a scleral stitch is thereby increased. A half curved needle is used and the two ends of thread are of equal length. The needle enters at (1), takes a good bite and emerges at (2). A millimetre distant, at (3), it is re-inserted and re-emerges at (4). The thread should be pulled through at (2) half of its length before taking the bite (3-4). In pulling the thread through the latter bite it should be

done carefully, so as not to knot or buckle the thread at the point between (2 and 3). The muscle stitch is taken as far back as deemed necessary. The needle is inserted at (5) from the outside, the thread carried under the muscle, emerging at (6) and including about a fourth of the muscle. The two equal length threads are knotted (tied) at (a). The needled end is re-inserted at (7) behind the knot, the thread is carried under the muscle, the tendon-tag (b) is picked up with delicate forceps and the needle emerges at (11) from beneath the tendon-tag. The second muscle stitch duplicates the first. The clamp, which includes conjunctiva, capsule and muscle (as do also the muscle stitches), is severed from the muscle. The two ends of suture A.S. are knotted or rolled together, and the same is done to the ends of suture A.S.[1] The threads A.S.[1] are passed between those of A.S. by the assistant and the muscle and globe are easily approximated. While thus held the operator ties suture T.S. to T.S.[1] above and below. The approximation sutures may be left in place for emergency or post-operative use, or can be severed if the operator feels all is well. The approximation sutures may be brought out of the outer canthus and pasted to the temple with adhesive plaster. Stress was laid by Hulen upon the value of these approximation sutures. Another point which may be claimed for this style of operation is that there is no sliding (and therefore sawing effect) of the sutures along the track of the scleral bite. In most operations as the sutures are tied and tightened the thread must of necessity slip along its track as it shortens. This usually happens at the scleral end, and it is just here that as little sawing as possible is wanted. Furthermore, should the operator inadvertently penetrate into the anterior chamber in taking the scleral stitch, no harm need be expected if the stitch lies quietly in place and no added trauma occurs, the result of a sawing action. Casey Wood's seton is an example of how a thread passing through the anterior chamber behaves. In both Wood's and Zorab's operations for the relief of glaucoma a silk thread is passed through the anterior chamber and remains for an indefinite period in situ without producing any untoward effects.

The reason black silk for the scleral stitch and Japanese silk for the muscle is suggested, is because of difference in color, greater strength of the Japanese silk, where strength is most needed and flexibility least required. The black silk is No. 6 and the Japanese No. 2.

LENS REMNANT SIMULATING A TUMOR IN THE ANTERIOR CHAMBER.

By E. H. Higbee, M.D., and Adolf Alt, M.D.,
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The patient, a lady 54 years of age, gave a history of having been operated upon for cataract about 18 years previously, both eyes being operated upon at the same time. She could not see any better after these operations. The right eye became very much inflamed and she eventually lost the sight entirely in it. The left eye remained about as it was before the operation until one year ago, when what little sight she had began to fail. This she attributed to an attack of grippe, but upon recovering from the grippe she found she could not see at all.

Examination on May 8th, 1915, revealed a tumor about 5 m.m. by 7 m.m. attached at the corneal margin and extending back over the ciliary body, filling nearly the entire anterior chamber. The tumor was yellow and there was a very small hæmorrhage very close to the upper nasal margin.

I removed about three-fourths of the tumor, it being impossible to get all of it away on account of the vitreous body having a tendency to escape; and now, 3 months later, with a plus 10 D. Sph. she has a vision of 20/50 and can read Snellen 0.75 with plus 16 D.

Just why the vision is not more acute I don't know, since there is no disease of the fundus, and the media are clear; cylinder glasses do not help any.

This is not an implantation tumor, as Dr. Alt's report will show, and while there are reports of unsuccessful attempts to remove a lens, I can find nothing that bears upon anything similar to this case.

REPORT OF A. ALT, M.D.

When, through the kindness of Dr. Higbee, I saw this patient, there was in an apparently quiet eye a round tumor-like mass, as Dr. Higbee describes it, apparently attached to the region normally occupied by the ligamentum pectinatum and filling, perhaps, four-fifths of the anterior chamber. There were two things which struck me at once as unusual. The first was the peculiar straw yellow color of the whole tumor, and the second its perfectly smooth surface. The latter reminded me at once of the surface of the lens, and I gave it as my opinion that this yellow

apparent tumor was probably a large remnant of the crystalline lens. This opinion was furthermore strengthened by the very history of the case, according to which the apparent extraction of the lens had given no sight and the eye had remained as it was before the operation.

The strange fact remained that, if it was a remnant of the lens, it had become firmly attached at the inner opening of the corneal incision. Since when removing this tissue Dr. Higbee found the attachment to reach further back to the ciliary body, there was probably an extensive formation of connective tissue which not only held the yellow lens mass in position, but furthermore by closing what opening there was in the lens capsule prevented the gradual absorption of the latter.

Fig. 1.

Disintegrated lens fibres. Large and small fissures which formerly contained cholesterin. To the left pieces of lens capsule. In the lower center focus of round cell infiltration.

When I received the specimen which Dr. Higbee had removed from the eye in a fresh state it consisted of a harder mass, probably the nucleus, surrounded by a grumous material, probably remnants of cortex. Specimens made of this grumous material showed, besides a small quantity of disintegrated lens fibres, innumerable crystals of cholesterin. The larger and firmer mass I hardened in the usual way. On section it was seen to consist of degenerated lens fibres whose general arrangement was abso-

lutely irregular. The cholesterin having been dissolved during the hardening process, there were innumerable fissures and slits separating these lens fibres from each other, representing the former site of the cholesterin plates and needles. While many of the lens fibres still had a nucleus which stained well, others had none. There were, however, a number of foci of round cell infiltration, as if due to a recent inflammatory attack. (See Fig. 1.) I could not find that any bloodvessels had grown into the mass which I had for examination, although the small hæmorrhage observed clinically probably points to the presence of blood vessels, at least, in the tissue by which the lens remnant was attached to the inner surface of the corneoscleral tissue.

The lens capsule, which undoubtedly had surrounded the whole mass snugly and smoothly before its removal, was detached and broken up in my specimens, but readily recognizable as such. In some parts a few epithelial cells were still adhering to it.

The straw yellow color was probably produced by the very large quantity of cholesterin, although even this is new to me.

BLEPHAROCHALASIS.

The clinical reports of this condition are so infrequent that one is justified in taking cognizance of every case report. Nancy Jenison (*N. Y. Med Jour.*, September 11, 1915) made a complete physical examination of a thirteen year old boy whose "upper eyelids overhung the eye slits," which were very narrow. The swelling of the lids had commenced when the child was ten, had continued unchanged for a long time. No increased lacrimation from exposure to heat or cold. The lacrimal glands were not palpable. Urine, blood and Wassermann examinations made; the latter showing one plus. A case of blepharochalasis was reported by Dr. W. B. Weidler (*Jour. A. M. A.*, September 27, 1913) but differed from the present one in having a negative Wassermann. The fact that the boy had no signs of lues and was hypersensitive to potassium iodide argued against the presence of syphilis. The author thinks that the condition occurs more frequently than it is diagnosed. One illustration accompanies the report.

SUCCESSFUL OPERATION OF A POST-TRAUMATIC DETACHMENT OF THE RETINA.*

By Prof. Dr. E. von Hippel.
From the University Eye Clinic of Goettingen.

When the patient, 23 years old, consulted me on March 17th, 1914, sixteen years had passed since he had been shot in the face by birdshot.

The left eye had to be enucleated at that time, the right one was saved. The following is the history as given on July 30th, 1898:

R. E.—The entrance wound about ½ cm. downward and inward from the corneal limbus, subconjunctival hæmorrhage at this place. Cornea, aqueous humor and lens normal. Pupil dilated by atropin. Ophthalmoscope shows a large blood coagulum in the vitreous body, flat hæmorrhages all around the papilla. Retina grayish-white, papilla red; to the outside and downward from it a grayish-black spot of about 1½ papilla diameter (site of perforation of shot or shot itself).

September 8th.—V. with —1D.s=0.4. Eight months later 0.3. At the final examination it was noted that downward and outward from the papilla a large white spot with a pigment margin had been formed, from which a band of tissue not unlike the tail of a comet grew out into the vitreous body.

When the patient called on me he had noticed a disturbance of vision for the last three weeks.

R. E.—With —7D.s=5/20. Nieden 1. Field very much restricted downward.

Ophthalmoscopical examination.—When the eye is turned downward and nasally a shining white, sharply defined, perfectly round band is seen, the anterior end of which cannot be made out, but must undoubtedly lie at the site of entrance of the shot. Backwards it can be traced through the whole of the vitreous body. It is there inserted into the sclera at the white spot described above. From this spot a membrane extends into the vitreous body, which floats, is bent at an angle and reaches to in front of the upper edge of the papilla.

Just at the papilla an extensive detachment of the upper half of the retina begins, which reaches exactly to the fovea. The lower half is perfectly in place.

Rest in bed. Bandage.

*Klin. Mtsbl. f. Augenhlk., Vol. LV., p. 146.

March 21st.—Central vision is gone, the detachment reaches beyond the fovea, many grayish-white folds.

March 25th.—Detachment almost complete, except a small piece nasally and downward.

With this rapid deterioration, any attempt to prevent blindness was justified. There could only be the question of an operation.

There was a sixteen year old double perforation of the globe by a shot. Its way through the vitreous body was filled by a round connective tissue band, which was firmly attached to the bulbus wall in front and backward.

Although so long a time had elapsed, we had to assume that the shrinking of this band, or rather of ophthalmoscopically invisible vitreous body membranes connected with it, was the real cause of the detachment of the retina.

Aside from this, the myopia had in the course of these years risen from 1 D. to 7 D., so that it was not possible to exclude the influence of the myopia as a possible cause of the detachment.

At any rate the operative task was to cut the ophthalmoscopically visible band in the safest and most careful way.

To attempt this cutting after Deutschmann's manner I considered uncertain and dangerous. Uncertain, because it might well happen, and was even probable, that the band, as secondary cataract bands will do, might move ahead of the knife; dangerous, because this must surely cause a pull on the retina.

I determined therefore to try the cutting with the fine Esberg-Luer scissors forceps under guidance of the eye.

After the conjunctival incision, I made a meridional section through the sclera below the tendon of the rectus internus. The wound lips were held separated by means of fine hooks, and a concentrated electric light was thrown into the vitreous body. I could then see the band very plainly and cut it with certainty without the least pull (March 26th, 1914).

March 29th, 1914.—No irritation, slight trembling of the lens. Superficial examination in bed: Visual field normal for hand movements with dim light.

March 31st, 1914.—Retina is perfectly attached all over, choroid easily visible.

April 8th, 1914.—Patient gets up.

April 14th, 1914.—V. with —8 D.=5/20. Visual field normal. Retina attached. With the ophthalmoscope the gap in the band can easily be seen, its ends being slightly turned from each other.

This condition has remained the same till now, that is for one year. Patient does his work as a farmer.

Although the possibility of a relapse is naturally present, especially through a connective tissue union of the two ends of the band and secondary shrinking, the value of this success is not depreciated.

That in this case the cure was due solely to the operation is so plain from this history that further remarks are superfluous.

In the nature of things such cases, in which a similar procedure can be used, will be encountered but rarely. I tried it in one other case of a simple perforating injury. Here a tough band was only visible forward. Backwards it connected with fine threads which were lost in the vitreous body. The operation was performed in the same manner as in the first case; however, I am not quite certain that I succeeded in cutting the band, as it could not be seen so well. At any rate it was unsuccessful.

One might think that it would be more appropriate to perform the cutting under the guidance of the ophthalmoscope. In general this will be impossible, at least under conditions like in our first case. In order to see the band with the ophthalmoscope the eye had to be turned way over to the nasal side and downward; in order, however, to reach the band with the instrument by the shortest route maximal abduction was necessary. In the abducted position I would have had to go from the temporal side through the whole bulbus behind the lens, which was, of course, not to be considered. From my extraction of pieces of copper from the vitreus, I knew well how perfectly operations can be performed in the vitreous body with intense electrical focal illumination. I believe the method I have employed serves the purpose best.

A few years ago (*Klin. Mtsbl.*, 1907, Vol. II, p. 192) Zimmermann reported a similar operation. The position of the vitreous bands, transversely behind the lens, rendered it impossible to cut them by a puncture with a linear knife from above under the guidance of the ophthalmoscope. In his case, too, a cure resulted.

It may, therefore, be recommended, especially in cases of late detachment after perforating injuries, to determine most carefully whether the one or the other case may be promising for the operative method here described or a similar one.

GONORRHOIC IRITIS.*

(A collective report from literature.)

By Eugen Keppler, M.D.,
Assistant in Professor Schleich's Eye Clinic at Tuebingen.

(Concluded from November number.)

Apetz[1] in referring to these experiments says that we are, perhaps, not in the wrong in looking upon the metastases as an action of metabolistic products of the gonococci, the gonococcus toxins. Ullmann,[58] also, thinks of the possibility of a toxin action and therefore demands the term gonorrhoismus, as denoting the general infection of the organisms with gonococci and their toxins.

Since according to Wassermann the toxins are contained only in the body of the microbes, according to Morax, especially in the body of the microbes but also in the culture fluid, the general opinion is that but little gonococcus toxin is diffused. Therefore Krueckmann[32] says: "If in gonorrhoic iritis we want to refer to a toxic action we can hardly do without the presence of gonococci in and outside of the iris tissue, especially since according to present knowledge the gonococci seem to act exclusively by their endotoxins and because for this reason they can damage in the main and in a manner clinically proven only the place where they are situated. We must, however, remember that in acute cases the damage to the iris tissue is usually slight or barely noticeable."

Gordon Byers (Cridland[9]) says similarly: "It is probable that the gonococci are carried as emboli into the very small blood-vessels of the eye and produce cell proliferation by their growth and their toxins." Thus he is of the opinion that the gonococci themselves are carried into the iris. But we find this idea already in Despagnet's paper in 1888, who says: "Without doubt the microbes which originally were in the urethra are transported by the bloodstream to the eye and it is very probable—at least a permissible hypothesis—that had I made a corneal paracentesis I would have found gonococci in the pus from the anterior chamber and in the aqueus."

Many things speak for this, as the repeated finding of gonococci in the blood, as Hewes (1894) and Ahmann (1897) have reported which shows that the local gonorrhœa has become a general affection. The gonococcus has, also, been found by

*Klin. Mtsbl. f. Augenhlk., v. LIV. p. 307.

Councilman and von Leyden in myocarditic pus foci and in endocarditic deposits. In 1896 W. S. Thayer and G. Blumer succeeded in getting pure cultures of gonococci from the blood; they found several times gonococci in the blood of a patient suffering from endocarditis. There are other publications on the same subject by Houle, Lehnartz, Wassermann, Harris and Dabnez. At the same time Prohaska published 3 cases of gonorrhoic general infection in which he succeeded in growing gonococcus cultures during life and after death from endocarditic deposits. (Sidler.[54]) From these results Le Roux and Heerfordt conclude that there may be true gonococcus metastases in the iris. "The transportation through the blood current can depend on only two causes, Krueckmann[32] writes, either a particularly high virulence of the special gonococcus strain or a particular receptiveness of the affected individual. We might think, too, that in gonococcus sepsis similar conditions are at work as those which have long been known for a staphylococcus sepsis, their getting into the blood by the breaking of a small abscess."

Sidler finally, as the first, succeeded in fulfilling the wish of most observers, by succeeding in finding in the contents of the anterior chamber of a patient suffering from iritis, microorganisms which morphologically, tinctorially and culturally were exactly like gonococci. There was a typical gonococcus metastasis. He, also, examined other cases of iritis which from all signs were considered to be gonococci and in part of which he could grow gonococci from the blood. He writes: "It cannot be assumed that in the 4 other cases of severe iridocyclitis, since they became afflicted under the same if somewhat less fulminant clinical symptoms, the gonococci had been carried by the bloodstream directly into the ciliary body and the iris and from there got into the anterior chamber either directly with extravasated blood or through the aqueous humor." That he did not find them in every case may be due to the difficulty of growing gonococcus cultures. That Lichtenstein,[36] 1898, did not succeed in demonstrating gonococci in two cases of gonorrhoic general infection may be due to this difficulty or be caused by the absence of lively gonococci from the specimens of blood which had been taken. On the other hand it is possible that the gonococci do not reach the aqueous humor in every case, but only by their presence in the bloodstream act irritating on the neighboring tissues. In other cases again, the gonococci seem to break through the vessel walls, penetrate into the tissue to increase there without wandering further (Sidler).

This last thought has been previously enunciated when no gonococci could be found in metatastic arthritis. Axenfeld (Disc. of van Moll) has pointed out that the gonococcus may exist in the tissue and from there let his toxins diffuse, without coming to the surface of the mucous membrane. Deutschmann's[12] examinations, also, support this. He writes in 1890: "The microscopic examination of excised pieces of conjunctiva (in endogenous gonorrhoic conjunctivitis) showed the cocci on and between the epithelial cells and in the subepithelial tissue enclosed in the body of pus cells close to the walls of the small bloodvessels. It is most probable that they here also enter the blood and lymph vessels and infect those tissues which react especially to their presence, that is, which are, perhaps, in a condition of diminished resistence."

Cridland[9] also, says: "In the light of the most recent cases which have been worked out bacteriologically in the most complete manner, the theory of the actual presence of the gonococci in the tissues gives the most probable explanation, especially if we assume a local toxin action."

While Schmidt-Rimpler[52] with many other observers (Noyes, DeSchweinitz, Macnamara, Hartridge) believes that gonorrhœa is rarely the cause of iritis, Michel[40] thinks that gonorrhoic iritis is certainly more frequent than hitherto has been usually accepted. Since it is not possible to confound a gonorrhoic iritis with a rheumatic one, Galezowski[16] goes a step further and maintains: "Perhaps, if we carefully re-examined the old observations of simple rheumatic iritis and compared them with gonorrhoic iritis, we might be led to discard the former altogether. In fact we know no case of iritis accompanying an acute articular rheumatism. I have often had occasion to observe rheumatic iritis and in most cases I have been able to find that the rheumatic pains as well as the iritis dated from the time of a gonorrhœa." Griffith,[21] also, is very sceptical concerning rheumatic iritis and believes that iris and rheumatism are very often due to a previous urethritis.

Compared with the frequence of gonorrhœa, gonorrhoic iritis is rare. The patients are mostly men in the middle years of life, in which gonorrhœa, too, is found most frequently. We find it often stated that the iritis does not appear after the first gonorrhoic infection, but after the second or third relapse. Reports of gonorrhoic iritis in women are very rare. This may be due to the fact that gonorrhoic urethritis in women is rare (according

to Zeisel barely 5 in 100 vaginal gonorrhœas), that the number of cases observed in men is very much greater than in women, and even when a gonorrhoic arthritis in women is suspected it is very much harder to make the diagnosis of gonorrhœa. Senator and others think this is due to the denser and firmer structure of the mucous membrane of the female urethra and the vagina. (Loeb.[38]) Others believe that the influence on the iris assigned to uterine diseases is in reality due to gonorrhœa, which causes a great many cases of metritis and salpingitis. Thus Lipski[37] and Terson, later Eperon, express the thought, "that probably DeWecker's metritic iritis is due to a chronic gonorrhoic infection of the female genitals." From this the rarity of gonorrhoic iritis in women is only apparent (Hamon[24]). DeLapersonne[34] reports in the Hôtel-Dieu of 6,500 to 7,000 new cases a year he found only one or two cases which he might diagnose as gonorrhoic iritis or iridochoroiditis. Sidler found in 65,000 patients 9 cases of gonorrhoic iridocyclitis, he thinks that the appearance of this disease in general depends on the frequency of gonorrhœa. Beaumont[4] saw in 20 years from 1888 to 1907 in the Royal Mineral Water Hospital 20 cases of acute or subacute iritis, 18 in men, two in women. Triebstein[57] reports that at the Marburg clinic in 16 years iritis was due to gonorrhœa in 1.25 per cent., iridocyclitis in 2 per cent. Guttmann[23] found gonorrhœa as the cause of iritis in 5 of 150 cases; in one case there was no rheumatic affection. The patients were men between 22 and 36 years of age. In general, gonorrhœal iritis is rare and there must be individual conditions which favor its development, whether there is a particular degree of virulence of the gonococcus strain, a personal predisposition by lowered resistence against the gonococcus invasion or some other unknown cause.

If now according with the descriptions of the disease we want to form the clinical picture of gonorrhoic iritis we must put Mackenzie's[39] description at the head. He lays stress above all on the severity of the inflammatory symptoms, the copious discharge of plastic lymph into the anterior chamber and the rapidity with which these symptoms disappear. He says: "The iritis which is caused by gonorrhœa is usually a very severe inflammation which quickly attacks the anterior surface of the iris which loses its natural color. For several days it seems to be an aquocapsulitis. Then it changes to a serous iritis. The pupil contracts and vision is decreased. At this time a copious discharge of plastic lymph takes place which rapidly fills the pupil. This

material often looks coagulated and is deposited in considerable quantity in the anterior chamber, which may even be filled altogether by it. The symptom does not exist to such a high degree in any other form of iritis and the gonorrhoic iritis is one of the most rapid in its course, the most accute and most serious forms on account of the severity of its symptoms." Galezowski[16] describes the symptoms in a case in 1878 in the following way: "Perikeratitic injection, alteration of the iris color, pupil irregular, after atropin instillation three posterior synechiæ and a pigment circle in the centre of the lens capsule. Cornea and aqueous humor are transparent. Fundus free. The patient complains of neuralgic pains in the distribution of the trigeminus which are especially severe in the evening. There is very pronounced photophobia." Five months later the iritis relapsed, pupil slightly contracted, slight alteration of the iris color. The former pigment circle has left only a spot like a pinhead. Worse after a week. "The chamber is filled with floccules which sink to the lower part. Posterior synechiæ and exudates on different points of the capsule. Keratitis punctata. Pain excruciating." To these symptoms he adds in his Traité des maladies des yeux 1872:[17] "The inflammation of the eye is from the beginning very severe; conjunctiva and sclera are very much injected without the least trace of pus. Soon the posterior surface of the cornea becomes dim, there are in places white or pigmented deposits, the aqueous humor loses its transparency, the pupil becomes irregular, its shape is altered by posterior synechiæ of low consistency. During this time the appearance of the iris is but little altered, its color is somewhat darker, but the copper colored appearance of the syphilitic or condylomatous iritis is not observed. It is a serous iritis. Photophobia, lacrimation and neuralgia are extraordinarily severe; but instead of getting worse at night they are worse after breakfast. There is another form of gonorrhoic iritis, the plastic or fibrinous one, which I have observed at the second or third relapse. In the pupillary area appears a whitish exudate of coagulated lymph which sometimes falls into the anterior chamber in numerous whitish floccules. This exudation is sometimes very copious and may fill the whole anterior chamber unless the disease has been energetically treated from the beginning."

Aside from these forms, iritis with hypopyon (Despagnet, Zimmermann, Galeszowski, Sidler, etc.) and with hyphæma has been reported.

There have, however, also some cases been described which came on during the course of a gonorrhœa or relapses of a gonorrhoic iritis in which the symptoms were less severe and which appeared more like a serous iritis. Thus it happens that we find many authors who maintain the opinion that the symptoms of gonorrhoic iritis differ in no way from those of rheumatic iritis. Panas[45] says: "Gonorrhoic iritis differs in no way from serous iritis except by its urethral origin." De Lapersonne, also, denies any characteristic symptoms and its existence. Groenouw[22] writes, special characteristic symptoms do not exist. Krueckmann[32] says: "I can be short as to the details of the clinically visible symptoms and point in the main to those of the rheumatic forms, marked differences from which I have not observed." After describing the symptoms Cridland[9] says: "It seems there is little that is characteristic in this form of iridocyclitis." And Hamon [24] agrees with Morax: "That the peculiar symptoms of this disease do not show constant alterations which are related to the nature of the infection by which they are caused. Thus iritis forms differing in their infectious origin may show the same symptomatic picture."

Mackenzie[39] lays, on the other hand, stress on the copious discharge of plastic lymph into the anterior chamber, the rapid course, and the severity of the symptoms. Lang emphasizes the frequent characteristic albuminous exudation in the anterior chamber which sometimes appears like a dislocated lens. (Griffith.[21]) Galezowski[18] in 1905 describes gonorrhoic iritis, sometimes with hypopyon, and concludes: "If I now sum up, I see that repeated attacks of iritis, the presence of exudations along the bloodvessels, numerous floccules in the vitreous body, intense and long continued scleritis form the symptoms which must prompt us to think of this ætiology." Vennemann[59] mentions 3 pathognomonic symptoms: (1) The severe, ciliary and supraorbital pain. (2) the increasing chemosis, and (3) the many fibrinous deposits in the anterior chamber. The fibrinous coagula sometimes fill the anterior chamber and the aqueous humor looks coagulated. According to Mackenzie[39] this is seen to such a degree only in gonorrhoic iritis. Elschnig[13] agrees with him and says: "According to my opinion cases with copious fibrinous or hæmorrhagic and fibrinous exudation seem to be especially characteristic for this iritis and the benign course of the affection is often in disproportion to the fulminant symptoms."

Krueckmann[32] believes: "In contrast to rheumatic iritis which

usually begins in an insidious way and which under certain conditions, unknown to me, may be connected with mydriasis, in gonorrhoic iritis a sudden surprising acute inflammation with miosis is the rule." He, also, thinks that an iritis which might otherwise be looked upon as rheumatic, when a slight hypopyon appears should make one think of a gonorrhoic ætiology.

These characteristic symptoms are mentioned by most authors who report cases of gonorrhoic iritis, as in the cases of Galezowski,[16,18] above mentioned, and in many of Hutchinson's[28] cases. I think Sidler's[54] cases are especially important as to the symptomatology, since by the cultures of the gonococci in one case from the contents of the anterior chamber, in 3 others from the blood of the brachial vein, the ætiology of these forms of iritis is pretty well established. He describes the first case as follows: "Left pupil smaller than right, the left is immovable to light and accommodation. The iris is somewhat discolored, the anterior surface is dim, no synechiæ; lens-like gelatinous exudation in the anterior chamber. Conjunctiva not red, not swollen; photophobia, lacrimation." There were gonococci in the blood. The other cases which showed gonococci in the blood were similar to this. The case with gonococci in the contents of the anterior chamber he describes as a "terribly severe iridocyclitis." Considerable chemosis of conjunctiva and lids; the right anterior chamber almost filled with a large, spherical bloody purulent fibrinous exudate which looks like a dislocated lens. Cornea dim from increased tension. Aside from the exudate in the anterior chamber only a small part of the iris can be seen. On it are two large hæmorrhages. Patient complains of severe pain. Globe painful on pressure. The pupillary margin is invisible. When an examination with the ophthalmoscope became possible opacities in the vitreous body and an optic neuritis could be seen.

The cases from our clinic at Tuebingen which I have described extensively in my dissertation (Tuebingen, 1913) gave us five instances of gonorrhoic iritis and iridocyclitis in which there is no possible doubt about the ætiology. In the first 4 cases the severe symptoms, the sudden inflammation with extremely severe symptoms of irritation, the great painfulness, are pre-eminent. Especial stress is to be laid on the gelatinous exudation in the anterior chamber and the favorable course under proper therapy of all the cases; diaphoresis with salicylic acid or aspirin seemed to act especially beneficially; it is to be mentioned, also, that in the 4 severer cases in spite of the rapid im-

provement exacerbations occurred. In cases II and IV a return to the norm resulted; this was probably so in case I, but the patient did not return. Our patients were all men of from 20 to 45 years. In all cases the disease was monolateral.

In all cases a gonorrhœa had preceded the iritis and in three gonococci were present in the urethral secretion. In four cases the patients had previously suffered from rheumatic affections and joint diseases which in part returned or became worse during the iritis. In case II the heart was, also, affected by the general infection. Only in case V no symptoms of a general infection were noted. Iritis may occur as the only gonorrhoic metastasis, as is pointed out by Fuchs[15] with other authors.

The cases reported, especially the four first ones, show the typical picture of this disease given by Mackenzie[39] and which we here repeat: The acute onset, the severe inflammatory symptoms, the excruciating pain, the gelatinous exudation, the relatively short duration and the favorable prognosis. Of course the diagnosis will always remain one of probability, unless a positive result is gained from the examination for gonoccocci of the contents of the anterior chamber. However, we did not make any punctures of the anterior chamber in our patients on account of the dangers connected with it. Yet, from Sidler's[54] report the punctures even during the severest inflammatory period do not seem to have caused any damage; in consequence, under otherwise favorable circumstances bacteriological examinations of the contents of the anterior chamber in gonorrhoic iritis may in future cases serve to establish the ætiology of this affection. However, the symptoms enumerated may make the diagnosis certain when other causes can be excluded.

Our material furnishes an addition to the clinical study of gonorrhoic iritis, the more so since the picture of this disease appears not to be sharply drawn in literature and especially in some text-books.

In consequence of the close connection of the iris with the other parts of the uveal tract, the iris is usually not alone affected, but also the other parts, the ciliary body and choroid, as is shown by the opacities in the vitreous body. At first the affection of the uveal tract can usually not be seen because the exudations in the anterior chamber forbid a deeper inspection. When the inflammatory symptoms have disappeared and the exudates are absorbed the remaining opacities in the vitreous body prove the participation of the uveal tract.

The iritis appears very rarely in the acute cases of urethral gonorrhœa; there are mostly first some joint affections which prove that the gonorrhœa has become a general affection. Yet there are cases in which the joint affections follow later or do not appear at all. Relapses of iritis are usually, but not always, preceded by an increased flow of discharge, either from a new infection with gonococci or an exacerbation in a chronic gonorrhœa the existence of which had not been observed, or the appearance or increase of previous symptoms of gonorrhoic arthritis may precede the relapse.

The disease is usually monolateral; however an iritis in the fellow eye may follow sooner or later. Foerster[14] and Groenouw[22] were of the opinion that both eyes are always attacked, if not simultaneously; this is, however, not fully borne out by the published cases. It seems, too, the bilateral occurrence is not a necessary peculiarity of the general infection, for the gonorrhoic gonitis, too, is frequently monolateral.

Mackenzie says the following about the course of gonorrhoic iritis: "Gonorrhoic iritis is one of the forms which run their course the quickest; it yields quicker and more completely than the others to active treatment and examples of perfect healing are seen even when the anterior chamber had been completely filled with lymph. In no other form is the healing so astonishing and so complete."

The often excruciating pain usually recedes in the course of a few weeks. sometimes relapses and increase in severity of the symptoms appear. In the published cases the inflammatory symptoms had disappeared usually in from 3 to 6 weeks. The hyperæmia decreases, the exudations are gradually absorbed, the hypopyon disappears. There are more or less broad synechiæ which may, also, disappear. The opacities in the anterior chamber clear up and when the fundus can be seen again there are opacities in the vitreous body which may considerably reduce vision. Yet, these, too, disappear after a time so that finally vision is very little reduced or normal.

Not always, however, is the course so favorable. Broad synechiæ may remain. Thus, Horstmann[26] reports a case in which there remained an almost total circular synechia. This complication and the more serious ones, occlusion and seclusion of the pupil, appear usually in the relapses. An irido-choroiditis complicating a gonorrhoic iritis is in general benign and ends in healing (Morax). In the serious cases of cyclitis and choroiditis

later on cataract may develop. Secondary glaucoma may come on on account of circular or total synechia (seclusio pupillæ) which destroys the communication between the two chambers. (Eperon and Hamon[24]).

Concerning the question whether the metastatic gonorrhoic iritis shows characteristic symptoms we may with Mackenzie[39] mention the severity of the symptoms, especially the severe pains which are, also, mentioned by other authors. They are found, also, in Sidler's[54] cases in which the gonorrhoic metastatic nature can least be doubted. Farther, the coagulating exudation in the anterior chamber is considered as characteristic, which can look like a dislocated lens and which Krueckmann[32] calls hypopyon-like for it seems only in exceptional cases to be of purulent character. Fibrin is probable as copious in it as the cellular elements. The course, too, seems characteristic. In spite of the alarming initial symptoms in most cases a full restriction and regaining of function takes place, which prompted some authors to ascribe this to their more or less particular therapy and to even maintain a specific effect of the medicines they used. As easily as such an iritis heals, as easily does it relapse. This tendency to relapse may, also, be considered as somewhat characteristic of gonorrhoic iritis. We know how obstinate the gonorrhœa is in the urethra and that often many years after the gonorrhœa gonococci are still found. As these may give rise to a recurrence of the urethritis, so they form, also, a focus from which occasionally gonorrhoic arthritis or iritis may spring. Such a recurrent iritis on a gonorrhoic base is reported in literature in great numbers. A further characteristic we might see in the influence of specific therapy, as the gonococcus vaccine of Eyre and Stewart, also Shumway, and the antigonococcus serum from which Butler reports good results. This therapy, however, is still in the experimental stage and we must hold back our judgment on its eventual value even in a diagnostic direction.

Agreeing with the course, the prognosis is in most cases good, especially when synechiæ have been prevented. However, we must fear relapses to which gonorrhoic iritis is especially prone whether a new gonococcus infection of the urethra is acquired or an old one flares up again, whether joint affections reappear or not. Or there may be, as Hutchinson expresses it, a sort of pendulum motion between the eye and the joints; when the eye affections improve sometimes relapses in the joints occur.

Passing over to the therapy of gonorrhoic iritis, the treatment

must be a general and a local one since the gonorrhoic iritis is the localization in the iris of a general infection.

The chief danger lies in the formation of synechiæ and eventually seclusion or occlusion of the pupil. Here atropin, perhaps, with cocain is in place. If atropin is badly borne, scopolamin, duboisin with dionin are of service. If the tension rises these remedies are contraindicated. Galezowski recommends scopolamin with cocain.

The pain is reduced by hot applications and by analgetics like antipyrin, pyramidon, etc., sometimes even morphin must be resorted to.

In order to reduce the inflammation formerly a seton was put in the neck; leeches were put to the temple and local venesection was practiced.

Druelle writes: "The application of leeches to the temple is a curing agent of the very first order in the treatment of gonorrhoic iritis as in syphilitic iritis (Hamon[24]). Inunctions of mercuric ointment with belladonna were, also, recommended."

Zimmermann[65] and Rauschenbach[47] employed special local methods of treatment. Zimmermann treated a case aside from atropin and scopolamin and salicylate of sodium with subconjunctival injections of bichloride of mercury, and praises the astonishingly rapid action of these injections with almost complete absorption of the exudation and restitution of an almost normal vision. He aroused by this the opposition of Morax,[42] who reported a case which he treated with atropin and calomel. Rauschenbach treated a case with scarifications of the conjunctiva. Morax says to this: "Since in these three cases the cure can be ascribed neither to the bichloride injections, nor the scarifications, nor the atropin and calomel, it seems to me to be much more logical that this form of purulent iridochoroiditis which appears during the course of a chronic gonorrhœa is in general of a benign character and its natural end is a cure. On account of its mildness and its special development it is probably a gonococcus localization; yet, I will not insist on this, because no bacteriologic examinations could be made. I only want to draw attention to this form of iridochoroiditis which from a clinical standpoint shows special characteristics of development."

For the general system there are potassium iodide the action of which is much discussed, salicylate of sodium, sulphate of quinine, calomel and aperients. A roborating diet will help the patient to bear the battle against the bacterial and toxin attack

more easily. Foerster[14] states that this iritis yields with more certainty and quicker to large doses of quinine and potassium iodide than to mercurials, which we cannot do without in other forms. A prolonged use of potassium iodide (6 to 10 weeks) is, according to him, very valuable against relapses.

Energetic diaphoresis with salicylic acid, aspirin, with especial sweating apparatus, especially also the light-bath, give us excellent results in the acute stage.

De Lapersonne[34] having pointed out the importance of a correct ætiological diagnosis of the iritis in view of the therapy, says: "To return to the practical side we might treat the gonorrhoic infection for a long time, might make nitrate of silver and permanganate of potassium injections into the urethra without curing these obstinate forms of iritis." Yet, we have seen above that the iritis is a symptom of the general infection, while the treatment mentioned by De Lapersonne is only local and not even specific. A specific therapy, however, is a vaccine which incites the formation of antibodies, and the injection of anti-gonococcus serum.

Starting from the principle of Pasteur's vaccination, Wright tried to produce a therapeutic gonococcus vaccine. Dieulafoy, who studied its action, came to the following results: "The therapeutic results obtained in gonorrhœa of the urethra or vulvovagina differ considerably. Some seemed good, some medium and others nil. The same must be said about gonorrhoic arthritis. As to the results in severe infection of the blood with gonococci we can give no final judgment; yet, it seems to us, as if in these cases the results had been more favorable." (Hamon.[24]) This opinion has since been made more clear. It was generally accepted that against acute gonorrhoic inflammations of the mucous membrane the vaccine therapy is untrustworthy and insufficient, that, however, more could be affected by it in general gonorrhœa. In a report of Weeks (1909) on serumtherapy at the ophthalmic section of the International Medical Congress held at Budapest this experience was expressed. Cridland[9] writes very favorably: "We can with confidence try to reach the most brilliant results by the use of a vaccine and the cases reported sustain this in a certain way." In this question Horder's opinion is of interest: "It is my opinion the vaccine therapy is an effective method in the battle against one important factor—it may be the most important factor—in the battle between the tissues and the many infectious agencies.

I believe, however, that other factors enter into this battle which are not influenced by the vaccine and that there is such a natural limitation although at present it is absolutely vague." This may be applied to the vaccine treatment of this infection and shows that we should not expect too much of these remedies. Eyre and Stewart saw in 4 cases of iritis with this treatment an improvement in a few days and a perfect cure in from one to two and a half months. Shumway[53] reports a decrease of the symptoms in two days; he injected 500 millions of gonococcus Neisser. After three further injections of 100, 200 and 300 millions a perfect cure was accomplished in 5 weeks without any other treatment. In England the general opinion is that small doses act best. Such doses may be repeated every week according to the reaction. We must, however, remember that the injection of gonococcus vaccine is not indifferent and the necessary care must be used in ordering it.

Schering manufactured a gonococcus vaccine consisting of a watery emulsion of dead gonococci, called "antigon." It has been used with success in cases of general infection which had withstood other treatments and has been recommended in literature as efficient. It is, also, recommended by some dermatologists as effective in chronic gonorrhœa. Its injection is said to be especially valuable in a diagnostic sense if a local reaction occurs at the diseased place. Perhaps, the diagnosis of general joint and eye diseases, including iritis, may be enhanced in this manner.

Butler[6] in 1911 reports 3 cases of gonorrhoic iritis in which he had a pronounced success with a gonococcus serum of Park, Davis & Co. He injected within a few days 2 ccm. of this. Zimmermann believes that he beneficially influenced a relapsing gonorrhoic iritis with paraspecific serum injection (1500 I.E. Behring's diphtheria serum) [Elschnig[13]].

We will not be able to do without the local therapeutic influence of atropin and scopolamin in order to prevent posterior synechiæ and to reduce the inflammatory irritation. On the other hand we may use the gonococcus vaccine or antigonococcus serum therapy to which the reported cases seem to prompt us, since gonorrhoic iritis must be looked upon as a general or systemic disease which is localized in the iris tissue.

From the statements made in the literature the diathesis, the whole constitution of the body of individuals suffering from gonorrhœa may make easier the distribution of the originally

localized gonorrhœa in the whole system and special in the endothelial membranes of the body.

Thus the rheumatic constriction the character of which is as yet totally unknown may play a role; or the diminution of resisting power of the body through various damaging influences. It is difficult to decide whether the gonococcus strains which give rise to metastatic affections are especially virulent ones. In the same way it is probably still undecided, as long as no further bacteriologic examinations have shed more light on this question, whether a mixed infection, for instance with staphylococci, occurs in gonorrhoic iritis as is assumed in gonorrhoic metastatic arthritis.

LITERATURE.

1. Apetz. Muench. Med. Wochenschr., 1903, No. 31.
2. Bach. Zeitschr. f. Augenhlk., XXVII, 1912.
3. Baylac la Rochelle. Ophth. Klinik, IX, 1905.
4. Beaumont. Britsh Med. J., 1908, II.
5. Brailey and Stephenson. Norris and Oliver System of Dis. of the Eye, Vol. III.
6. Butler. Zeitschr. f. Augenhlk., XXVIII, 1912.
7. Del Castillo. Ophth. Klinik, IV, 1900.
8. Colsmann. Berl. Klin. Wochenschr., 1882, No. 16.
9. Cridland. Ophthalmoscope, 1913, Febr.
10. Despagnet. Recueil d'ophtalm., 1888.
11. Despagnet. Arch. d'ophtalm., VIII, 1888.
12. Deutschmann. Graefe's Arch., XXXVI, 1890.
13. Elschnig. Finger and Jadassohn Hdb. d. Geschlechtskr., Vol. II, 1912.
14. Foerster. Graefe-Saemisch, Vol. VII, 1876.
15. Fuchs. Hdb., 1910.
16. Galezowski. Gaz. des Hosp., 1867, No. 5.
17. Galezowski. Traité des mal. des yeux, 1872, Vol. I.
18. Galezowski. Rec. d'opht., 1905.
19. Gosselin. Gaz. hebdomad., 1874, No. 17.
20. Greef. Berl. Klin. Wochenschr., 1901, No. 6.
21. Griffith. Ophth. Rev., 1899, XVIII.
22. Groenouw. Graefe-Saemisch, Vol. XI, 1904.
23. Guttmann. Deutsche med. Wochenschr., 1905.
24. Hamon. Dissert. d. Paris, 1910.
25. Heerfordt. Graefe's Arch., 72, 1909.
26. Horstmann. Zentrlbl. f. p. Augenhlk., Oct., 1881.
27. Higgens. Guy's Hosp. Rep., Vol. XIX, 1874.
28. Hutchinson. Ophth. Hosp. Rep. Vol. VII, 1873.
29. Knapp. Arch. f. Augenhlk., VII, 1878.
30. Knies. Auge and Allgem. Erkrankg., 1893.
31. Koeniger. Diss. Berlin, 1872.
32. Krueckmann. Graefe-Saemisch, Vol. V, 1908.

33. Kucharewsky. Zentrbl. f. pr. Augenhlk., 1901.
34. De Lapersonne. Arch. d' opht. XXV, 1905.
35. Lehmann. Diss. Berlin, 1904.
36. Lichtenstein. Jahresber. d. Ophth., 1898.
37. Lipski. Diss., Paris, 1895.
38. Loeb. Deutsches Arch. f. Klin. Med., XXXVIII, 1886.
39. MacKenzie. Practical Treatise, 1854.
40. Michel. Lehrb. d. Augenhlk., 1890.
41. Morax. Annales d'ocul., CIX, 1893.
42. Morax. Annales d'ocul., CXIV, 1895.
43. Mosso. Zeitschr. f. Augenhlk., XXVIII, 1912.
44. Nobel. Arch. f. Derm. and Syph., XXVI, 1894.
45. Panas. Traité des mal. des yeux., Vol. I, 1894.
46. Parsons. Path. of the eye, Vol. IV, 1908.
47. Rauschenbach. Klin. Mtsbl., 1894.
48. Le Roux. Jahresb. d. Ophth., 1908.
49. Rueckert. Klin. Mtsbl., 1886.
50. Schwarz. Encycl. d. Augenhlk., 1904.
51. Schmidt-Rimpler. Erkr. d. A. mit andern Erkr., 1898.
52. Schmidt-Rimpler. Augenhlk., 1901.
53. Shumway. Klin. Mtsbl., 1912, II.
54. Sidler-Huguenin. Arch. f. Augenhlk., LXIX, 1911.
55. Stilling. Grundz. d. Augenhlk., 1897.
56. Terrien et Cantonnet. Arch. d'opht., XXVII, 1907.
57. Triebstein. Diss. Marburg, 1912.
58. Ullmann. Zeitschr. f. Augenhlk., XV, 1906.
59. Vennemann, Lagrange & Valude. Encycl. franc. d'opht., Vol VI, 1906.
60. Vossius. Lehrb. d. Augenhlk., 1898.
61. Von Wecker. Graefe-Saemisch, Vol. IV, 1876.
62. De Wecker. Thérapie oculaire, 1879.
63. De Wecker and Landolt. Traité complet., Vol. II, 1886.
64. Zehender. Handb., Vol. I, 1874.
65. Zimmermann. Klin. Mtsbl., XXXIII, 1895.

ABSTRACTS FROM MEDICAL LITERATURE.

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THE TRAGEDY OF SCLEROSTOMY: AN ACCOUNT OF EIGHT EXAMPLES OF LATE INFECTION.

That there is a lurking menace in all filtering operations for glaucoma is well brought out by the report of T. Harrison Butler (*Ophthalmoscope,* August, 1915). When the newer operations for glaucoma were introduced Butler took them up with enthusiasm, selecting finally as his operation of choice the Holth's "punch operation." Together with Jameson Evans, in 1914, Butler made an analysis of their filtering operations and compared them with the results of iridectomy. To their great surprise it was found that the iridectomy results were as good or better than in the filtering operations. Both agreed that in acute glaucoma iridectomy was the safest method and gave the best results. Butler admits his faith in sclerostomy was shaken Since then he has largely gone back to iridectomy, but was inclined to revert to sclerostomy when he experienced, as he expressed it, a regular epidemic of cases of late infection, eight in number. He truly remarks that while an increasing number of late infections have been published in the last two years, yet probably the majority have never reached the pages of ophthalmic literature. In sclerostomy the object is to produce a filtering scar and such a scar appears to be a permanent source of danger. Butler thinks that the operation should be reserved for cases in which iridectomy has failed to lower tension, or in which the iris is so atrophic that iridectomy is obviously useless. He divides his infections into three classes: (1) Acute cases, ending in acute uveitis and panophthalmitis necessitating removal of the eye. (2) Cases of severe iridocyclitis, which destroy the sight. (3) Cases of mild iritis, and local inflammation round the aperture which recover. Eight case histories illustrating these three classes are detailed. The following conclusions of Butler are given in his own words: "An examination of the foregoing cases will show that every kind of scar was affected. In one case there was apparently firm cicatrization with no filtration; others had ectatic scars. In two a small button-hole was made at the operation. Some operators make light of button-holes, in fact some turn back no flaps and so leave an open hole in

every case. My experience tends to show that a button-hole constitutes an additional danger. A thin cover to the aperture is obviously unsafe. It may be suggested that my cases were mostly treated with the punch and that my conclusions cannot be applied to the trephine operation. I can only state that the scars obtained by the punch method are in appearance both to the naked eye and under the miscroscope, almost exactly similar to those yielded by the trephine. I conclude that late infection is a peril which, like the sword of Damocles, hangs over every eye which possesses a filtering cicatrix of any type, however obtained."

SOME NEW SYMPTOMS IN AMAUROTIC FAMILY IDIOCY.

Isador H. Coriat (*Boston Medical and Surgical Jour.*, July 1, 1915) contributes a short article on the above subject. He calls attention to some symptoms which he states have been completely overlooked or only briefly described. These symptoms are given as follows:

1. Explosive laughter. This was noted in three cases. Whether this explosive laughter is a sign of the mental deterioration, as sometimes occurs in multiple sclerosis or dementia præcox, or due to some thalamic lesion, is impossible to definitely state at present.

2. Hydrocephalus. This was present in one of Coriat's cases and in one case each reported by Huysmans and Sachs and Strauss.

3. Bulbar symptoms. Present in one case shown by drooling of saliva, choking spells, difficulty of swallowing and attacks of apnœa.

4. Nystagmus. Constant lateral and rotary nystagmus was present in 3 cases, in one of which it persisted during the entire course of the disease.

5. Hypotonia. Marked flaccidity of the limbs in two cases resembling the condition seen in amyotonia congenita.

6. Abnormal reflex phenomena. Hyperacuisis which is characteristic appears to be present in nearly all cases at least in the early stages, although it may disappear with the increasing mental weakness. Coriat mentions also another reflex phenomena, viz.: an increased sensitiveness to light or to tactile stimuli. The child, if lightly touched or exposed to the flash of an electric pocket lamp into the eyes, will give expression to a sudden

muscular starting or twitching of the entire body. Among other abnormal reflex phenomena there may be a rythmical contraction of the quadriceps muscle on plantar stimulation. Contralateral knee jerk has been observed. Attempt at ankle clonus may cause not the reflex itself but instead a rhythmical contraction of the opposite quadriceps muscle. The prolongation of the reflex discharge after the initial external stimulus (as seen in the knee jerks, ankle clonus and plantar reflex), is probably caused by an irradiation from the pyramidal tract. Coriat goes into an explanation of the various reflex phenomena and concludes by saying that the widespread cellular nature of the disease with the mechanical destruction of the neurofibrils removes certain inhibitions which naturally exist in the central nervous system, somewhat like the action of strychnine, and consequently the amaurotic idiot reacts to stimuli like a strychninized animal.

TWO CASES OF DOUBLE TRAUMATIC HEMIANOPSIA WITH PARTIAL RECOVERY.

C. E. H. Milner (*The Lancet,* July 24, 1915) reports two cases of this condition due to trauma. The essential features presented by the two cases were as follows: The occurrence in both of bullet wounds in the occipital region immediately followed by complete blindness; and of subsequent recovery of vision except in one direction, which was identical in both—the left lower quadrant of the visual field. Milner states that perhaps the chief interest is a psycho-anatomical one, namely, a consideration of the question why there existed a condition of total blindness, and why there has been recovery. The case histories are given in full. The author states that there are two possible solutions as to the ætiology of the condition present in both cases. In both there was certainly some actual damage done, i.e., some permanent injury to the lower part of the cuneus on the mesial surface of the right occipital lobe which would readily account for the persistent quadrantic hemianopsia. As to the transient complete double hemianopsia this may, on the one hand, have been caused by hæmorrhage at the moment of the trauma, by blood effused along the mesial aspect of the occipital lobes, which by pressure caused immediate total blindness, and later became organized into a small clot. Or it may have been due, as suggested by Maj. F. W. Mott, to a profound but passing shock effect, which made itself felt also in the opposite occipital lobe, and for the time being paralyzed the function of the entire viscero-sensory apparatus.